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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,070	03/29/2004	Gustaaf Willem Van Der Feltz	1857.2780000	8087

26111 7590 12/27/2007
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

KIM, PETER B

ART UNIT	PAPER NUMBER
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2851

MAIL DATE	DELIVERY MODE
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12/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/811,070

Applicant(s)

VAN DER FELTZ ET AL.

Examiner

Peter B. Kim

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-19, 23, 24, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23, 24, 27 and 28 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on Oct. 23, 2007 have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 9, 13-16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (GB 2321316) in view of Shiraishi et al. (Shiraishi) (5,117,255).

Hashimoto discloses a lithographic apparatus and a device manufacturing method comprising an illumination system (22), a patterning system (13), a substrate support (8), a projection system (12), a temperature measuring system (2), a calculating system (11), an adjusting system that adjusts the substrate temperature to compensate for deformation (p. 16-19). Hashimoto discloses temperature measure system comprising at least one sensor that measure the temperature of the substrate at each of plurality of regions across the surface, sensors distributed across the support and sensing the temperature of an adjacent region of the substrate (Fig. 1, ref. 2). Hashimoto also discloses temperature mapping system, the calculating system that develops a model of the substrate (Fig. 2). Hashimoto discloses device manufacturing method and the method of establishing a model comprising emitting projection beam, imparting to the beam a pattern, supporting a substrate, projection the pattern to target portion of the substrate (p. 12, lines 13, 14 and p. 16, lines 13-17), measuring temperature of the substrate, calculating a dimensional response and adjusting the spatial characteristics, and deriving a model of the

dimensional response (p. 16, line 24 - p. 19, line 5). However, Hashimoto does not disclose adjusting spatial characteristics of the patterned beam to compensate for the dimensional response, wherein the cross-sectional shape, a position and a size of the patterned beam is adjusted. Shiraishi discloses a lithographic apparatus and a device manufacturing method comprising compensating for deformation due to temperature (col. 12, line 59 – col. 13, line 8) by adjusting spatial characteristics of the patterned beam relative to a substrate support wherein the spatial characteristic comprise a cross-sectional shape, a position, and a size of the patterned beam (Fig. 10, 11, col. 18, line 58 – col. 19, line 41). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to correct for deformation with higher overlay accuracy as taught by Shiraishi in col. 2, lines 35-59.

Claims 6-8, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Shiraishi et al. (Shiraishi) as applied to claims 1 and 13 above, and further in view of Feder et al. (Feder) (2004/0012404).

The further difference between the claimed invention and the modified Hashimoto is the temperature sensor located above the substrate. Feder discloses in para 0032, the temperature sensor located above the substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the temperature sensor above the substrate in the invention of Hashimoto where the sensors are in a linear array extending transversely in order to accurately measure the temperature of the substrate.

Allowable Subject Matter

Claims 23, 24, 27 and 28 are allowed for the reasons stated in the previous office action.

Response to Arguments

Applicant argues that Shiraishi discloses changing image strain shape, but not the cross-sectional shape of the beam. Shiraishi discloses compensating for image strain, and in changing the image strain shape, the cross sectional shape and position of the patterned beam must be changed to improve overlay accuracy (col. 2, lines 43-59, col. 7, line 10 – col. 8, line 40, col. 19, lines 3-20). Similar to the claimed invention which must change the cross-sectional shape or position of the beam in response to the shape of the substrate, Shiraishi must change the cross-sectional shape or position in response to the shape and position of the pattern already on the substrate (abstract). Regarding the Korean application, the cited reference does not seem to disclose adjusting a cross-sectional shape of the beam.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Onishi et al. (2004/0065848) reference is included to show technology relevant to the claimed invention in that thermal deformation of wafer is calculated and the position of the beam is changed in response (para 0017-0031).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Peter B. Kim
Primary Examiner
Art Unit 2851

December 21, 2007